



Technology Demonstration Summary Sheet

Remote Controlled Concrete Demolition System

THE NEED

During the decontamination and decommissioning (D&D) process, the removal of radioactivity contaminated concrete can be a long, labor intensive process that has the potential for high exposure rates, heat stress and injury to personnel.

THE TECHNOLOGY

The technology, a Brokk BM 150, manufactured by Holmhed Systems AB of Sweden and supplied by Duane Equipment Corp., uses a remote operated articulated hydraulic boom with various tool head attachments to perform the work. The machine is designed primarily to drive a hammer and has a reach of fifteen feet. The Brokk can be operated by someone 400 feet away or in a different room with a TV monitor. The machine can be operated up to a 30 degree gradient. The unit requires a 480 volt, 50 amp circuit for its power source. Two attachments were used in this demonstration. The hydraulic hammer and the excavating bucket. The hammer operates at 600 foot pounds and has outputs of 1000 to 1500 beats per minute. The bucket had a capacity of 1/4 cubic yard and had a smooth cutting edge. Other attachments available include a concrete crusher, a La Bounty shear, and a 1/4 yard clamshell bucket. Smaller and larger sizes of the Brokk are available from Duane Equipment Corporation.



Brokk 150 with hammer attachment

THE DEMONSTRATION

The demonstration was performed at the Argonne National Laboratory (ANL) Janus reactor in August and

September 1997, as part of a D&D contract with Afftrex LTD. who subcontracted the concrete demolition to Duane Equipment. The Brokk's ability to remotely break the concrete shield walls and reactor pedestal and then to load the rubble into containers was tested inside of a building with all other areas of the building remaining in operation during the demonstration.

THE RESULTS

The Brokk Remote Controlled Concrete Demolition System dismantled the reinforced concrete biological shield walls and reactor pedestal, approximately 66 cubic yards, and then loaded the rubble into shipping containers. Included in the rubble was 48 cubic feet of lead and 96 cubic feet of mixed waste that was segregated and containerized separately. The machine was controlled by one operator working in an adjacent room and had only occasional help from a laborer working in the area. The Brokk completed work in 16 days that was projected to take 6 months to complete with manual jackhammering.



Operator with remote controller

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CP-5 LARGE SCALE DEMONSTRATION PROJECT

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